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gio,¹ *fasoì longhi*, *fagiolo e maccarone* ;² at Cayenne, *pois rubran* ;³ at Barbadoes, *Halifax pea* ;³ at Jamaica, *asparagus bean* ;⁴ in Cochin China, *dau dau* and *tau co*.⁵

(To be continued.)

THE EAST GREENLANDERS.

BY JOHN MURDOCH.

THE veteran authority on the Eskimos, Dr. Rink, has recently published an able and interesting paper on this easternmost outpost of the great Eskimo race,⁶ in which he reviews the ethnological results of the late successful Danish expedition to East Greenland under Captain Holm, and draws important conclusions as to the original home of the Eskimos, and the probable course of the wanderings by which they have reached their present habitations.

In his opinion, the metropolis of the Eskimos is probably to be found in Alaska, and he finds a confirmation of this view in the fact that here the Eskimos are not confined to the coast, but spread inland along the rivers.

It is a fact, however, that the proportion of the Eskimos of Alaska who really dwell in the interior is very small indeed, being confined to the valleys of the Kuskokwim and the adjoining less important rivers, and to the three rivers emptying into Kotzebue Sound, while along the rest of the coast from Kadiak to Point Barrow they are as purely littoral—or “Orarian,” to adapt Mr. Dall’s term—as in Greenland or Labrador. Nevertheless, this scanty remnant may represent the original condition of the race.

He believes that the migrations of the race can be traced by the development of certain inventions as we pass along the shores of the continent from Alaska to Greenland. For instance, the kayak, which is probably, as he believes, derived from the open

¹ Vilmorin, *Les Pl. Pot.*, 280. ² Martens, l. c. ³ Schomburgkh, *Hist. of Barb.*

⁴ Macfadyen, *Jam.*, i. 288.

⁵ Loureiro, l. c.

⁶ *Die Ostgrönländer in ihrem Verhältnisse zu den übrigen Eskimostämmen.* Von H. Rink. *Deutsche geographische Blätter*, vol. ix. No. 3, 1886, pp. 228-239.

birch canoe, still used by the Eskimos of the Upper Kuskokwim, is far heavier and more clumsy in the west than in the intermediate regions, and reaches its highest development in Greenland.

It is, however, to be noted that the kayaks in use along the shores of the Arctic Ocean from Bering Strait to Point Barrow are far superior to those used by the nearest Eskimos to the eastward of that point, and approach closely in lightness and elegance to those of the Greenlanders, though essentially different in model.

According to our author, the use of the double-bladed paddle among the true Eskimos (excluding the Aleuts) does not begin till we reach the mouth of the Yukon, and is only used when speed is specially desired, even as far as Point Barrow, while a single-bladed paddle is sometimes used in the kayak as far as the Mackenzie. Moreover, the art of turning completely over in the kayak and righting oneself by means of the paddle is very unusual on the Alaskan coast, and completely developed only in Greenland.

A similar course of development, Dr. Rink believes, may be traced in the set of weapons with which the kayak is fitted out. He considers the "bird-dart" and "bladder-dart" (the former a javelin with a cluster of prongs at the middle of the shaft for taking fowls in the water, and the latter designed for catching seals, and therefore provided with an inflated bladder to impede the motions of the wounded animal) to be developments of the arrow, and the large harpoon, with a bladder attached by a line, to be a development of the latter, and finds the more primitive forms of these weapons more generally used in the south and west, while the more highly-developed forms gradually appear as we approach Greenland.

Our extensive collections at the National Museum tend to confirm these conclusions. The larger part of the harpoons from the region south of Bering Strait, even those of large size for capturing the beluga, are of the type of the "bladder-dart," or of the still more simple type without a bladder, in which the shaft itself is made to act as a drag by attaching the line to it in a martingale, and these, especially to the southward, are often feathered like arrows. Even as far as Point Barrow the only projectile weapons used in the kayak are the bird-dart and a small "martingale-dart."

The custom of wearing the labrets, or peculiar lip-studs of the western coast, which extends as far as the Mackenzie region, is believed by Dr. Rink to be a custom which the wandering Eskimos brought with them from their original homes, when they were in contact with the labret-wearing Tlinkets.

On this supposition, however, it is difficult to account for the abrupt way in which a custom universal up to Cape Bathurst ceases at that point, without a vestige of it traceable anywhere to the eastward. When we consider that there is now a long stretch of uninhabited country between the natives of Cape Bathurst and their neighbors in the east, with whom they have no communication, is it not more probable that the labret-wearing habit is one of comparatively recent date, which, spreading from the south and west, only reached the Mackenzie region after communication with the east was severed?

Dr. Rink derives a similar argument from the dwellings of the Eskimos, which in Southern Alaska resemble those of the Indians, having a fireplace in the middle of the floor.

As we go north and east the fireplace is replaced by the oil-lamp, and snow-huts gradually take the place of houses, till in Greenland we find edifices of earth or turf and stones and drift-wood. The form of the house also changes from square or round to an oblong shape in Greenland, capable of being added to at the ends in proportion to the number of the household. This extension reaches its greatest development in East Greenland, where the whole village occupies a single house.

These large dwelling-houses also furnish a substitute for the large public club-houses, for working, and social and religious assemblies, so common among the Eskimos and also usual among the Indians. Such houses as these are no longer found in Greenland, if they ever existed there, and are but partially represented among the eastern Eskimos by a sort of large snow-houses. The periodical festivals and masked dances, so frequent in the west, are less frequently practised as we approach Greenland, apparently in proportion as the influence of the *angokoks*, or wizards, increases.

The greatest similarity between the branches of the race is to be seen in the language. According to Dr. Rink, the number of "radical words," or those which form the basis of the intricate compounds used in the language, which differ from the Green-

landic or are doubtful in the other dialects, may be roughly stated in percentages, from the material at his command, as follows: in the Labrador dialect, fifteen per cent.; in the middle regions, twenty per cent.; in the Mackenzie region, thirty-one per cent.; and in Alaska, fifty-three per cent. A careful study of the vocabulary collected by our expedition (U. S. International Polar Expedition to Point Barrow, Alaska), containing over one thousand words, in which about five hundred and fifty radicals may be distinguished, has convinced me that only fifteen per cent. of these are different from the Greenlandic radicals.

There is no doubt, as our author believes, that the inhabitants of East Greenland and Alaska, brought together and allowed sufficient time, could easily learn to understand each other. In fact, the interpreters from Labrador who accompanied the English explorers had no difficulty in conversing with the western nations, and I have seen American whalers, who had made themselves familiar with the Eskimo jargon in use at Hudson's Bay, converse fluently with the natives of Point Barrow.

Dr. Rink believes that the dialectic differences indicate that the Aleuts were first separated from the parent stock, then, and much later, the Southern and Northern Alaskan Eskimos, those of the Mackenzie, and finally those of the middle region, and that Labrador and Greenland were peopled by branches from the last.

Coming, now, to the consideration of the peculiarities of the newly-discovered East Greenlanders, he considers them in much the same condition as their western neighbors when described by Egede. One noticeable peculiarity about their harpoon is mentioned,—namely, that the head is fastened to the shaft by a pivot, as in the “toggle-iron” used by civilized whalers, whereas among all other Eskimos the head slips off the shaft and “toggles” at right angles to the line. The harpoon-float is made of two bladders instead of one, and the old implements for taking seals on the ice, abandoned on the west coast since the introduction of firearms, are still in general use.

The bow is no longer used, owing to the disappearance of the reindeer, but cross-bows are used as toys by the children, or for shooting birds. The knowledge of this weapon, the writer believes, is due to foreign influence. They have no fish-hooks, but take fish with the net or a three-pronged spear like those used by the Eskimos in many other regions.

Their artistic taste and skill is very great; and equals, or even excels, that of the long-famous Alaskan Eskimos. Their carvings often consist of little figures carved from bone or ivory, fastened with pegs to wooden surfaces. All sorts of implements are ornamented with such carvings, representing natural and imaginary objects or conventionalized ornaments. The most extraordinary of their objects of art are the relief maps carved in wood, in which the islands are represented by separate pieces, attached to the mainland by thongs.

Much taste is also exhibited by the women in ornamenting and embroidering their clothing (in which, again, they resemble the Alaskan Eskimos), though their needles are all home-made, hammered and ground out of old iron obtained from wrecks.

The inhabitants of each winter village appear to form one large household, more or less under the control of a single head, chosen apparently by tacit consent, and whose commands often do not need to be expressed. The head of the household was observed to give definite commands as to the order in which the eight families of his household should take their places on the sleeping platform, how the lamps should be lighted and the windows closed. During the winter one young man was expelled from the house by way of punishment, and compelled to seek shelter elsewhere. Hospitality is universal, as with the Eskimos everywhere.

The largest of the several "village-houses" on the Armgagsalik fjord, where Captain Holm wintered, contained fifty-eight people. The house nearest Captain Holm's winter-quarters had eight families, thirty-eight souls living and performing all their work, sleeping, cooking, eating, singing, and dancing in a space twenty-seven feet long, fourteen and a half feet wide, and at the utmost six and a half feet high!

Much valuable linguistic material was collected, thanks to their excellent interpreters, Christian West Greenlanders, and fifty-one interesting traditions, of which thirteen are plainly identical with those of other Eskimos, while in thirteen others are recognizable well-known traditional elements. From a preliminary examination of the linguistic material, it appears that there is more difference between the dialects of East and West Greenland than between the well-known North and South Greenland dialects.

Captain Holm is of the opinion that the East Greenlanders

travelled round Greenland from the north, while the West Greenlanders came down southward along the shores of Baffin's Bay, meeting the others at the southern point of Greenland, and there forming a mixed race. The author considers that the differences described favor this hypothesis, but thinks it too early to draw a general conclusion from the facts at hand. He adds that the mixed race in all probability also contains Scandinavian elements, though not the slightest trace of Scandinavian culture is to be discovered.

In a foot-note at the beginning of the article Dr. Rink states that the direct inspiration of the paper was the fact that he had the opportunity of studying the rich ethnological collection from East Greenland in company with Captain Holm, and also personally received information about the western Eskimos from the brothers Krause and A. Jakobson, and about those of the middle region from Dr. F. Boas. He also courteously acknowledges the information received from other sources, especially from those in America who are engaged in studying similar subjects.

U. S. NATIONAL MUSEUM.

THE SIGNIFICANCE OF SEX.

BY JULIUS NELSON.

(Continued from page 42.)

EXPLANATION OF PLATES VI.—VIII.

Figs. 94 to 124, *h*, illustrate cell-division (94-104 are Protozoan), and Figs. 124, *j*, 133 illustrate fertilization (*i.e.*, the union of male and female pronuclei).

PLATE VI.

FIG. 94, *a-b*. *Opalina ranarum*—Kent, Plate 26. See also Nussbaum, A. m. A., xxvi., and Zeller, Z. w. Z., xxix.—This "unicellular" animal is multinucleate, and the nuclei multiply by karyokinesis (see Figs. 104, 105) independently of cell-division. The latter takes place successively as in *a*, until small cells like *b* result, containing few nuclei. These become encysted and the nuclei fuse to become one. Then the mononucleate animal escapes and increases in size, while the nuclei become more numerous again. Their number may rise to hundreds.

FIG. 95, *a-d*. *Oxytricha scutellum*—Gruber, Z. w. Z., xl.—As this infusorian grows the number of nuclei increases by direct division until we have a form like *c*, then the nuclei fuse (*d*) to become one, and then once more divide. As this proceeds the cell-body is constricted between the groups of nuclei as shown in *a* and *b*.

FIG. 96, *a-b*. *Polytrichus schwartzii*—Bütschli, A. m. A., ix.—This infusorian